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Plastics in Food and Drinks Play Big Role in Annual $250 Billion Healthcare Tab

Exposure to just four types of plastic costs the U.S. healthcare system nearly $250 billion per year, according to a study in the Journal of the Endocrine Society. The majority of adverse health effects involved the endocrine system, but investigators also found cancer, childhood development delays and IQ deficits.

By Angelo DePalma, Ph.D.

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Illnesses caused by plastics and their chemical ingredients cost the U.S. healthcare system $249 billion per year, or 1.2% of gross domestic product, according to a study in the Journal of the Endocrine Society.

Most of the harm came from ingesting just three plastics in contaminated foods and beverages. The most significant effects were related to the endocrine system.

The study's goal was to estimate the health risks of these materials from products with high human exposure — plastics ingested or encountered through foods, drinks and objects around us.

Understanding these associations, the authors said, will lead to strategies for reducing their harmful effects.

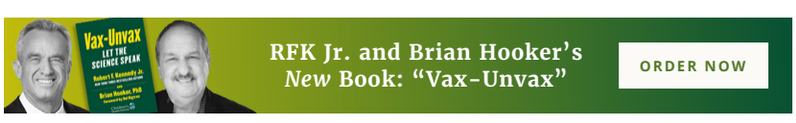
Singling out the top four culprits

Plastics belong to a broad chemical class known as polymers — long-chain molecules consisting of hundreds or thousands of repeating chemical units, or monomers. In chemical jargon, mono means "one" and poly means "many."

Many polymers exist in nature. For example, starches and cellulose are made of repeating sugar monomers, but the authors of the study considered only those that were completely or partially synthetic.

Researchers performed a literature search on four general categories of synthetic or semi-synthetic plastics with confirmed or suspected ill effects on health:

- Polybrominated diphenyl ethers (PBDEs), a family of more than 200 compounds used mostly as flame retardants but also found in textiles, plastics, wire insulation and automobiles. PBDEs have been linked to endocrine disruption leading to fertility issues and delayed neurodevelopment in children.
- Phthalate "plasticizers" or chemicals that make plastics more durable are found in hundreds of products, including vinyl flooring, lubricants and personal-care products. Phthalates do not persist in the body but their short stay is long enough to interfere with endocrine-related events associated with normal pregnancy, child growth and development.
- Bisphenols, including bisphenol A, are found in many food-packaging plastics and coatings, for example, plastic wraps and water bottles, from where they leach into foods. Bisphenols have been associated with hormonal, neurological, liver and reproductive problems. The food industry has searched for replacements for bisphenol A but the alternative, bisphenol S, is a possible carcinogen.
- Perfluoroalkyl and polyfluoroalkyl substances, or PFAS, are another very large class of plastics used since the 1950s to prevent food from sticking to packaging or cookware. Although these materials are found in cars, construction materials and electronics, harmful human exposure occurs mainly by consuming contaminated foods and beverages. PFAS have been associated with hormonal and immune dysfunction, obesity and certain cancers that affect women.



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Plastics wreak havoc with human health

The authors limited their investigation to polymers and applications with the greatest potential for human exposure. When a polymer had significant human-contact and non-contact applications they estimated the percentage for each.

They then calculated the healthcare cost for each plastic by multiplying how much of it is used in high-exposure applications by the published estimates of the chemical's health risk.

For example, if the overall healthcare burden of a certain plastic is $1 billion per year and it is used 50% of the time to make plastic food bags (with high human exposure potential) and 50% of the time as a concrete additive (low exposure risk) the total cost of the health effect is $1 billion times 0.50 = $500 million.

The researchers performed these calculations on the most-used plastics within the four groups mentioned above.

Within the PBDE group, PBDE-47 is widely found in the environment and animal tissues and is broadly associated with immune system issues.

The study authors estimated the plastic's main societal cost, $159 billion (or 63% of all plastics-related costs) based on IQ points lost among exposed children and approximately 24,000 diagnoses per year of "intellectual disability."

Testicular cancer or undescended testicles accounted for less than 1% of PBDE-17's total economic impact.

Healthcare costs associated with phthalates were estimated at $67 billion, or 27% of all costs. That phthalates were responsible for so much illness is interesting because phthalates' acute toxicity is very low, to the point where rodents ingesting several grams survive.

However long-term exposures, even at levels much lower than what rats ingest in a toxicity study, are associated with endocrine disruptions in children. These disruptions can lead to obesity, Type 2 diabetes, high blood pressure, impaired thyroid function and thyroid cancer, abnormal genital development in males, bad pregnancy outcomes, plus respiratory and nervous system issues.

Calculations for costs related to PFAS were based on exposures to two of these agents, PFOA and PFOS, with a combined healthcare impact of $22.4 billion, or 9% of the total for all plastics. The researchers provided a detailed account of these effects broken out by age, sex and type of health effect.

The leading health risks for these chemicals were obesity among adults, which cost health systems $15.8 billion, followed by childhood obesity ($2.46 billion) and pneumonia ($1.32 billion).

Bisphenols had the smallest impact, $1.02 billion, mainly affecting childhood obesity following prenatal exposure to one bisphenol compound, BPA.

The relative unimportance of BPA in this analysis is surprising because BPA materials come into contact with so many foods and beverages and, according to the authors, and the main source of human exposure to plastics is through diet.

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Only a 'subset' of possible ill effects

Because the researchers were limited by the numbers, availability and quality of studies connecting plastics to unfavorable health outcomes they likely underestimated the total impact of plastics on health.

"We were able to estimate disease burden for only a few chemicals used in plastic materials, and a subset of diseases for those few chemicals," they wrote.

Another source of possible undercounting of effects and costs involves how the researchers calculated the economic effects of illness.

Some investigators use a "cost of illness" (or "burden of disease") approach that includes immediate and direct expenses for hospitals, drugs, surgeries and supplies plus indirect costs related to longevity, quality of life, and costs associated with premature injury, disability or death.

Others used a "willingness to pay" approach based on how much a person or insurer is willing to pay to treat or prevent an illness.

Cost-of-illness is calculated from actual dollar outlays, while willingness-to-pay is estimated from surveys.

These numbers should be similar, however in practice, cost-of-illness underestimates actual costs due to societal factors — for example, different hospital charges or practices in different countries.

The authors wrote that had they used "willingness to pay" instead of "cost of illness" for phthalate exposure they would have arrived at a cost exceeding $500 billion for phthalates.

To blunt the health effects of plastics exposure the authors urged the adoption of the United Nation's Global Plastics Treaty to "reduce the use of chemicals of concern, particularly PFAS, bisphenols, flame retardants, and phthalates."

The treaty, currently in draft form, seeks to limit the manufacture of problematic plastics, with benefits to the U.S. alone "likely to be in the billions of dollars and accrue annually as sustained reductions in exposures are achieved," according to the authors of the study.

The treaty is expected to be finalized this year.

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Angelo DePalma, Ph.D., is a science reporter/editor for The Defender.

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Bottom line: ***They don't care***, and profit from ill-health.

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Everything the industry does is by design. It's been a slow rolling Genocide of the masses for many decades.
Most people are so tied up in their lives to even care. Now, they are conditioned to consume the products that hurt them and their families and many will refuse to change their behavior no matter what they are told.
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Other than that manufacturers could use glass to replace plastic but that would increase costs to them.
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Sandburners
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PFAS are found in much more than cars, construction equipment, and electronics. They're in almost all dental floss, except a few types, so we get to rub them all over the insides of our mouths daily. They're also in waxy food packages, such as those used in fast food and microwave popcorn. Also waxed paper plates. I suspect they may be present in those little white waxy bags that pharmacies use to put our prescriptions in (being sure to expose us so we'll buy more of their drugs). This toxic chemical is very prevalent. Please look for alternatives. They exist. I use the PFAS free dental floss. It's easy to find on line, and is packaged in a cardboard container instead of a plastic one. I've known this for years, but am glad it's finally moving to the forefront so consumers can take action against it plus shift their buying habits to any available products that are PFAS free or even partialy PFAS free.

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B_Carol2017 ↗ Sandburners
6 days ago

Add to your list (interior is plastic coated) paper coffee cups in the fast-food to-go industry. Paper on the outside, plastic on the inside of these cups.

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Ginger Steel Hudock

6 days ago

I agree with limiting all plastics where we can, but I don't want the UN regulating this. We have seen the problems with the UN and the WHO throughout the past 4 years especially!

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